African Universities' Research Approaches (AURA) Programme: Research Proposal for Kenyatta

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African Universities' Research Approaches (AURA): Programme Research Proposal

1. Document overview

This proposal is divided into seven parts, with this overview forming the first section. **The second section** provides an overall summary of the AURA programme – this is at a high level and includes details about the different strands of the programme, as well as looking at anticipated results and impact. Then the proposal moves on to the literature review. This provides a justification for our thinking around the programme, including evidence to support key programmatic design decisions particularly around the importance of developing research capacity at Kenyatta as well as on the importance of innovative, pedagogical practices.

Section three spells out the programme design in greater detail. This section includes citations from the literature review to emphasise the evidence-based nature of the AURA programme design. **Section four** provides greater detail of the programme's design and key facets, such as looking at the role project coordinators and the ALIRT teams play in the programme implementation. **Section five** focuses on the AURA diagnostics. The AURA diagnostics are a tool the programme uses to capture information from partnering institutions through content analysis, surveys, interviews and focus groups. The aim of the diagnostics is to ensure programmatic decisions are made in a collaborative manner using inputs directly from the individuals participating in the programme. This section contains an overview of the different research methods used. **Section six** zones in on Kenyatta more specifically and looks more specifically at the steps the AURA programme will be taking with your institution.

This document concludes with the appendices, which include a full list of references used throughout the document.

2. Executive Level Summary of the AURA programme

This section presents the reader with a high level summary of the AURA programme as a convenient reference point for: getting an overview of the AURA programme; the programme context; the main two strands of the programme; and the programme impact and deliverables.

2.1. Overview

In November 2014, The Institute of Development Studies (IDS), the Information Training and Outreach Centre for Africa (ITOCA) and Loughborough University were awarded a £2 million grant by the UK Government's Department for International Development (DFID) to work with up to nine universities in Sub-Saharan Africa, over a three and half year period, to enrich the research and teaching practices of faculty working in health, agriculture and the environment.

The **African Universities' Research Approaches (AURA) programme** proposes to bring together the collective knowledge of researchers and educators based in the global south and north to co-create a context-specific educational framework that will:

- address the need for locally generated research knowledge by skilled researchers (and graduates);
- support faculty to nurture strong research and information capabilities in research-led teaching and learning environments.

The programme aims to address continent-wide goals, as expressed at the United Nations Economic Commission for Africa's (UNECA) annual conference (2014), to strengthen and support universities to transform Africa through investments in people-centred innovations that will bring about economic prosperity, as well as democratic and responsive governance.

The programme runs from November 2014 to March 2018, and will generate the following **deliverables**:

AURA Programme Deliverables:

Improving research and teaching practices

- Work with at least **nine university departments** to embed research capacity into their research and teaching programmes
- **Deliver research capacity courses** (including research communications) for academics and professional staff
- **Deliver a contextualised educational theory and practices programme** (consisting of three courses: in teaching theory/practice, learning assessment and curriculum development)
- **Review existing university courses** and produce/pilot **a refreshed curriculum** in the

nine institutions

- **Produce a research teaching and learning framework**, share this with other institutions in Africa and other parts of the world

Sharing and learning

- **Host virtual learning events** (topics to be determined based on need)
- Co-develop and test **two online e-learning resources**
- **Share** approaches, tools and course materials through creative commons licenses
- Produce **research publications** about the programme

2.2. Impact and outcome

The high level intended *impact* of the programme is: **poverty reduction in sub-Saharan Africa as a result of strengthened higher education organisations**.

The programme *outcome* is: **improved capacity of universities to contribute to poverty reduction.**

Intermediate outcomes are:

1) Stronger research and research communications: Improved production of more effective research through an approach that emphasises information and evidence literacy and behavioural change. Strengthened skills for communicating research and engaging in policy and research uptake processes.
2) Enhanced human capacity: Teaching skills will be improved so that students passing through the university will develop stronger research and critical thinking skills.
3) Sector strengthening: This project's approaches, tools, courses, and other materials will be shared widely with higher education institutes in Africa.

2.3. What are the anticipated results?

2.3.1 Improving research teaching and practice

- Research capacity courses run for faculty in nine institutions reaching 135 faculty members.
- Nine faculties embed research capacity building approaches into their research programmes and teaching.
- Existing academic courses are reviewed and at least one curriculum is revised, produced and tested to strengthen research content in each institution.
- Three new teaching capacity courses developed and contextualised for nine institutions, reaching 370 course participants.
- One course for research communications developed, contextualised, and implemented; training 290 participants in total.
- **Integration of research capacity building and improved pedagogy into teaching will have a positive impact on the education of many thousands of students contributing to strengthened human capital – a key driver of economic growth.**

2.3.2 Sharing and learning

- Approaches, tools, and course materials shared widely among African HEIs, including three virtual learning events reaching 210 participants.
- Learning disseminated across the sector through publications and regional and international outreach activities, including two publications produced related to research capacity development, capabilities and culture in Africa shared with 100 institutions, and presented at least one international event.

- Learning disseminated across the sector through publications and regional and international outreach activities, including seven additional Open Educational Resources completed and shared with 70 participants.
- Two online e-learning resources co-developed and tested, and at least 110 people complete one course.

3. AURA Literature review

The AURA programme is built on evidence based research. This section looks at two key areas of the programme: teaching and research. The former, broadly speaking, gives the reader an introduction to learner-centred teaching approaches, providing some context into how they've developed as well as evidence to support their efficacy. The latter, on research, looks at the current levels of research output in sub-Saharan Africa and gives evidence for how this could be improved and why this is relevant to your institution and the AURA programme.

3.1. Learner-centred pedagogy literature review.

3.1.1. History and context

AURA will work with the faculties of its partner institutions to innovate their teaching practices by introducing a range of context-specific, and relevant teaching and learning modalities that will foster research-apprenticeships, as well as encourage graduates to develop independent learning, problem-solving and critical thinking skills. This objective will be achieved through a multitude of ways, but a major contribution will be made through adopting a learner-centred approach to pedagogy. Learner-centred approaches have their historical roots in the time of Socrates (Fensham et al., 2012) and Confucius (Edwards & Li, 2011). Furthermore, there are strong traces of learner-centred methods in many African indigenous cultures. Marah (2006), through a review of traditional pre-colonial education in Africa, highlights the importance of intimately integrating a practice based, holistic system's approach with the social, cultural, artistic, religious, and recreational life of African groups. However, the modern interpretation of learner-centred pedagogy developed through the influence of philosophers from the late 19th and early 20th centuries who questioned the nature of childhood and how children should be educated (Schweisfurth, 2013). Two key contributions to the development of learner-centred pedagogy include the progressivism of John Dewey and the social constructivism of Lev Vygotsky. Dewey considered education a powerful agent of societal transformation; his model of education emphasised individualized learning based on active engagement and empirical problem-solving (Dewey, 1916). Vygotsky, another influential educational psychologist, is also a major contributor to learner-centred pedagogy. His major contributions to today's pedagogy are his epistemological views on the nature of human knowledge and factors determining its acquisition (Vygotsky, 1978 Eds.). The central concept of Vygotsky's constructivism relevant to present-day pedagogy is his claim that an individual's knowledge is not transmitted from one person to another, but actively constructed or rather, co-constructed, through interactions with other individuals within a defined socio-cultural context. The practical nature of the dialogue based learner centric approach is well articulated by Julius Nyerere (cited in Mushi, 2009):

"The question of learning by doing is very important. The best way to learn sewing is to sew; the best way to learn farming is to farm; the best way to learn cooking is to cook the best way to learn how to teach is to teach and so on."

This discussion on the origins and developments on learner-centred approaches helps challenge two false preconceptions: that the thinking behind them is 'new' or 'modern' or that they're essentially a 'western construct'. Neither of these is correct.

Learner-centred approaches have also been actively promoted by international organisations for over 30 years. UN agencies are especially active in this regard, UNESCO and UNICEF both building learner-centred approaches into their visions for improved schooling. UNESCO's Associated Schools Project Network, for example, which includes over 8500 schools internationally, emphasising learner-centred based 'essential dimensions' of what it considers a quality education (in Schweisfurtha, 2013). This includes: emphasising creativity and imagination, and introducing cross-curricular and interdisciplinary approaches as well as team teaching and holistic approaches to education (UNESCO, 2008). There are also examples among individual aid and non-governmental agencies, and networks that combine the efforts of a wide range of donors, such as the International Network for Education in Emergencies (INEE). The INEE endorses learner-centred approaches as one of its 'minimum standards' for education in emergency and post-emergency situations: For people to learn effectively, participatory teaching and learning techniques, including learner centred methodologies, are deemed essential. Its handbook claims that successful teaching methods should address the needs of the whole person, teaching skills necessary for survival, individual development, social interaction, and academic study (INEE, 2004)

At a regional level, there's been recognition in East Africa for a need to adopt learner-centred approaches to pedagogy from at least the 1980s onwards. For instance, recommendations from the 1982 presidential commission on education in Tanzania included the following: "Many teachers in our school system use the lecture or teacher-centred approach to teaching. Because of this problem, many students fail to understand the concepts and lessons taught" (United Republic of Tanzania, 1984). However, this early recognition of the situation has not led to any widespread change in the ways teachers teach. A 2004 report by the Ministry of Education and Culture noted that "teaching and learning in secondary schools has remained traditional for a long time," and "most teachers have not been exposed to modern teaching and learning practices consistent with current theoretical developments in teaching and learning" (MOEC, 2004). Other scholars have confirmed that teaching across Eastern Africa has generally been characterized by didactic and teacher-centred approaches that use rote memorization as the primary approach for evidence of learning. (Vavrus, 2009; Barrett, 2007).

Similarly, teacher education in developing countries is rarely learner-centred and does not provide suitable models upon which teacher trainees can base their practice and is sometimes too theoretical (Schweisfurth, 2011). According to ILO and UNESCO, the content of teacher training programs in East Africa do not focus adequately on reflective practice, active learning, innovation, creativity or partnership building. Additionally, there was often a

disjuncture between the teacher training provided and the realities of the schools, their communities, and the world of work (ILO/UNESCO, 2006).

Furthermore, Bunyi et al. (2013) found that while teacher trainers in East Africa considered their trainees to be equipped with learner-centred teaching methods, in real sense, the trainees' participation in the lesson was in answering mostly recall questions, demonstrating what they had either been shown or told how to do and writing down notes. Trainees were not engaged in serious reflection and discussion about what they were learning, neither were they being challenged to think and demonstrate how they would use different methods to respond to particular needs in their future classes.

We have presented a perspective on learner-centred approaches from a variety of perspectives. Going back, however, to our context in higher education, a comprehensive review was carried out by the Million+ group of higher education institutions, in a report entitled 'Teaching that matters,' that helps summarise the importance of learner centred thinking at the university level. The report argues that more universities should provide a "dynamic, interactive and inspirational" learning experience by shifting "the focus and responsibility from the lecturer to the learner". This, "at its simplest, is about creating activities and giving opportunities for students to discuss, explain and debate during class," argues the report. The report's review of evidence is based on interviews with students in higher education, ministers and employers organisations.

So, impetus for moving towards learner-centred approaches comes from a number of directions, from local, national and global actors and agents, as well as a number of different sectors. Having outlined some of the history and context, the rest of this section will move onto to outlining specific characteristics of the learner centred approach to give the reader a better understanding of its core facets.

3.1.2. Characteristics

More specifically, based on the constructivist tradition, Brodie et al. (2007) have elaborated four substantial aspects of this approach, and these are set out below:

1) **learning entails the construction and restructuring of knowledge by the learner;** educators do not make them learn and can only provoke or enable learning; aside from being effective, it's argued that this also helps improve retention (Zepke et al., 2007).
2) **learners act on the basis of the knowledge they bring to a task** (See also Preece & Griffin, 2002); educators try to understand and engage with learner's ideas. This requires the educator to be able to recognise what is present and absent in the learner's utterances and identify ways to improve sense-making for the learners;
3) **learners must experience a gap between their existent knowledge and the demands of their experiences, and must be in a position to either elaborate or acquire the resources to overcome the gap.** It's addressing this gap that's the fundamental process that the learner-centred approach takes you through (Brodie et al., 2002)

4) **construction of knowledge and social practices are mediated by the social relations the learners are embedded in and the social forms and means of learning with which they act.** The educator needs to offer mediation that can enable learners to articulate their given knowledge into more powerful systems and regulate their activities in line with valorised knowledge, practices and activities. This is the essential line on the role of the educator, which far from being reduced, is different: mediation and facilitation rather than the more authoritarian role the traditional format espouses.

3.1.3. Empirical evidence

Having outlined the history and context and demonstrated the push from various agencies and institutions, the literature review on pedagogy ends with a look at the supporting evidence for learner-centred pedagogy.

Please note, however, there are caveats: some of these studies might be applicable only in their regional context of the global north and indeed only in their own particular time and specific context. This, of course, further highlights the need to carry out contextualised research into this area, and this is indeed within the remit of the AURA programme.

Below is a list of studies that provide empirical evidence. This is not an exhaustive list by any means, however it includes studies that have influenced certain members of the AURA consortium. The list includes comments on why the studies might be relevant to AURA.

- Important educational outcomes, such as higher-level thinking and attitude change, are less likely to take place when students listen to lectures than when they engage in more active forms of learning (Pascarella & Terenzini, 2005). That there's evidence the learner-centred approach is best placed for the attitudinal change is a key finding for AURA given the emphasis of the programme on attitudes and behaviours, as well as measuring skills.
- A report by Mollins, entitled 'Learning Our Way: Women, Computers and Literacy' (2001) on an adult literacy program in Canada focused on computing classes and recommended that we use the learner-centred approach to engage women in the course design process, which significantly challenges the situation where women often find computer classes uninteresting and irrelevant to their needs. This report alludes to a further area for AURA to focus on, and that is of gender differences: is the learner-centred approach more effective with men or with women – or is it roughly similar?
- In New Zealand, Lai (1993) has reported that to encourage independent thinking, the learning process needs to be learner-centred, and the learner has to be given the opportunity to process information, to question, to solve problems and to make decision. Lai's paper draws a distinction between learning that is dependent, the dependence being wholly on the instructor, and a relative state of independence when asked to interact and engage in dialogue.

- Fassinger (1996) surveyed more than 1,000 students in over 50 classes from a wide range of disciplines that met at the same time period; she discovered that students perceive themselves as less involved in the classroom than faculty perceive them to be. She finds this perceptiom was far more the case for the traditional method, and its reliance on the instructor, than the learner-centred pedagogies.
- The evidence suggests that if an instructor's goals are not only to impart information but also to develop cognitive skills and to change attitudes, then alternative teaching strategies should be interwoven with the lecture method during classroom presentations (Bonwell & Eison, 1991) . This is relates to the above by Pascarella & Terenzini, 2005).
- Similarly, Bligh (2000) concluded his comprehensive review of the literature with this recommendation: "Use lectures to teach information. Do not rely on them to promote thought, change attitudes, or develop behavioural skills if you can help it". Given its important I have used 2 citations (Pascarella, 2005; Bligh, 2000; Bonwell, 1991), each providing evidence, for this basic point: that while the lecture format is good for imparting information, the learner-centred approach is more effective in developing it. The conclusion being that the lecture format too has its place; the traditional format is not obsolete now, it just has a different role - namely to impart information.
- Being learner centred could assist retention in university courses. The data from Zepke et al. (2007) suggests that learner-centeredness improves retention where students feel they belong in an institutional culture, where they experience good quality teaching and support for their learning, and where their diverse learning preferences are catered for. Given that retention is a major goal for any course, this is a significant finding.

Drawing on this evidence, it is clear that learners who then go on to teach in universities are likely to draw upon experiences and training that they have had most exposure to, which in most cases happens to be more teacher-centred as the literature demonstrates. This, then, helps sustain the cycle and prevents change. This is why it's important for AURA to address these primary influences by working with faculty to improve their teaching practices and to create more fertile territory for a learner-centred approach.

3.2. Sub-Saharan Research literature review.

A report from the World Bank and Elsevier (2014) shows that at present African researchers produce only 1% of the world research. However, between 2003 – 2012, there has been a marked improvement, and African researchers have more than doubled their outputs. These are encouraging signs and it is important for progress to continue on this front. One big question for the AURA programme is how can these gains be continued and, indeed, increased? An increase in research quality and quantity is something each partnering institution on the AURA programme has identified as one of its objectives. Needless to say this isn't something that can wholly be addressed within the confines of a three year programme, however it is important for AURA to make progress in at least addressing ideas of how this is likely to happen.

One great misconception about how best to address this issue comes from the supply side. The misconception is that there is a lack of research availability in sub-Saharan Africa. A study conducted in early 2009 by ARCADIA to look into the main obstacles faced by African scholars in accessing resources required for research has dis-proved the general belief that access to literature is the major constraint (Harle, 2010). The ARCADIA study shows that access and availability to peer-reviewed research in East and Southern African universities is comparable to their European counterparts (Harle, 2010). Furthermore, across Africa a number of technological changes and development interventions are making it easier to address any remaining supply side issues, such as the access researchers have to research knowledge. Infrastructural improvements, including most significantly the new undersea Africa Coast to Europe broadband cable, are rapidly improving access on the technological side. It is widely hoped that this will present scholars with new opportunities to cultivate their digital scholarly practices, and connect with stakeholders in response to research agendas that will "work toward a strategy that could help the continent leapfrog and accelerate its development" (Sesay & Kermeliotis, 2011).

However, despite so much progress on these supply side issues there is still a huge disparity between African and European research universities in terms of research use and production as indeed the World Bank's report, cited above, shows (World Bank, 2014). Elite journals in development studies are also dominated by Northern scholars (Piotrowski, 2014), and recent studies show that among many researchers, and even librarians, effective use of electronic materials remains low (Piotrowski, 2014). The problem, therefore, is now less about the supply side issues related to access and availability, and more about demand side issues of information capabilities, academic cultures, and environments. This disparity is attributed to a lack of awareness of available resources as well as an observable lack of capacity amongst academics to discover and use resources (Sesay & Kermeliotis, 2011). Existing training initiatives have achieved a degree of success by targeting the trainers, such as librarians, to provide the unmet need for training academics in e-resource discovery and use (Sesay & Kermeliotis, 2011). However, the study showed that a large percentage of academics were not aware of this training and therefore could not take advantage of these opportunities to increase their digital and information capabilities. This points to a need to design effective learning interventions that focus directly on the academics. A further aim would be to design learning interventions that foster effective working relationships between academics, students and librarians to ensure sustainability.

In order to achieve the Africa 2.0 vision for socioeconomic development, higher education institutions will play a crucial role in innovating ideas and constructing an evidence base that will enable decision makers, and business, to achieve their economic goals (About Africa 2.0, n.d.). Finding solutions that enable these stakeholders to communicate effectively to co-construct and co-create research knowledge will require investments in human capital if it is to lead to better governance, and economic growth.

In May 2012, BLDS within the context of the Mobilising Knowledge for Development (MK4D) Information Literacy Programme undertook an exploratory exercise with Loughborough University in three African higher education institutions (in Botswana, Zambia and Malawi)

which aimed to explore their efforts to foster the information and academic capacity of Southern researchers. This participatory research included in-depth interviews and group discussions with senior management, faculty and professional staff, to identify ways that institutions could develop strategies to strengthen research capacities while at the same time improving the teaching and learning environment.

The findings of this exploratory exercise showed that faculty were keen to increase their research output, both in terms of quality and quantity, but were hampered by institutional constraints and a lack of individual skills (Hepworth & Duvigneau, 2013). At an institutional level, there was a shortage of time and opportunities to cultivate a strong research practice, owing largely to demanding teaching burdens which, furthermore, did not connect to faculty research agendas. At the individual level, researchers found it difficult to develop their research skills, again due to a lack of available time. Furthermore, strengthening research capabilities were found to be closely connected to effective teaching and learning practices. For instance, curriculums did not effectively contribute to and draw on current (or local) research, furthermore poor information capabilities among academic translated into poor capabilities of students, whilst didactic teaching approaches exacerbated the classroom burden of the academics. Despite the different resource contexts of the three institutions involved in the study, the issues raised by participants were remarkably similar, as were the solutions identified. A similar picture has been found elsewhere in Africa and in other parts of the world (Hepworth & Walton, 2013).

Summary of key findings:

- There was evidence of a lack of research among academics, and although there is willingness to undertake research their efforts are hampered by their heavy teaching load. This has contributed to a lack of research uptake (Hepworth & Duvigneau, 2013).
- Research capabilities were under-developed through a lack of institutional support, and a lack of opportunities to conduct research – particularly for new researchers. Initiatives have taken place and these have been welcomed, however, there is a need for research capacity building to pay closer attention to the local context and the priorities of the institution and faculty (Hepworth & Duvigneau, 2013).
- A lack of research led to a lack of locally generated research material that could be used in teaching, to engage students, or help inform decision-makers, and influence public policy.
- Academics lack the confidence and ability to foster the research capabilities of their students
- The teaching and learning culture also contributed to the lack of research capabilities, including independent learning, critical thinking and information literacy among students due to:
    - A lack of pedagogical awareness and skills. Currently, academics are dependent on teacher-centred learning approaches;

    - A lack of innovative teaching and learning environments foster passive, dependent, surface-level learners which promotes a least-effort culture and creates didactic expectations and behaviours amongst the students.
- Information capabilities were taught as a stand-alone intervention by librarians who lacked the authority and opportunity to work with the academics to embed these capabilities in the curriculum or to link these capabilities to the research agenda. Therefore there is a need to address the misconception that information capabilities only relate to library orientation skills.

Attributes such as critical thinking and the ability to use, co-produce and communicate research are needed by employers including those specialising in poverty alleviation and economic development (Association of American Colleges and Universities, 2013). These attributes will require a fundamental change at an institutional level in tertiary education. This change requires capacity building that focuses on the research capacity of academics as well as their pedagogic knowledge, skills and behaviours. These areas can be seen to be interconnected and, ideally, learning would take place in collaboration with the student through participation in ongoing research projects, led by academics in consultation with external partners.

4. Detailed overview of the Project Design

This section elaborates on the executive summary provided in section two. Rather than a broad sketch of the programme's objectives, here we focus more on the programmatic structure and dynamics. This includes once again going over the research and teaching focus, but looking more specifically at how this will operate on the ground level. The section also includes details of how the ALIRT team and Project Coordinators will function in the AURA programme design.

4.1. AURA Structural overview

The AURA project consortium will work with a minimum of nine university departments who are conducting (or have aspirations to conduct) research, as well as teaching in three thematic areas: health, agriculture and the environment. The consortium invite applications from institutions who are working within these themes, and those who are conducting research or teaching curricula that adopts a multi-sectoral approach.

The AURA programme will work initially with one faculty department, in each university, on the following strands of work:

1. **Improve research practice**
   We will work with faculty to strengthen the production and communication of research through an approach that emphasises: strong research skills; information and evidence literacy; and effective research behaviours and practices. Furthermore, we will work with faculty to increase their confidence in using a range of

communication channels to engage and inform policy audiences and decision-makers. **More specifically, we will design a personalized, professional, practice education programme in research philosophies, methodologies and techniques; research communications and ethics.**

2. **Improve research teaching practices**
   We will work with faculty to innovate their teaching practices by introducing a range of **context-specific and relevant** teaching and learning modalities that will foster research-apprenticeships, as well as encourage graduates to develop independent learning, problem-solving and critical thinking skills. These approaches will enable faculty to dedicate the time to research activities with support from their student-researchers. **In order to achieve this goal, we will contextualize and deliver an education framework consisting of three courses: the theory and practice of teaching; learning assessment; and curriculum design.**

3. **Enrich faculty curricula in health, agriculture and the environment**
   Each university department will be expected to apply the research and teaching practices to an existing faculty curriculum with the support of the AURA project team and internal support structures (see point 4 below). The refreshed curriculum (either undergraduate or postgraduate level) will include a blend of learning approaches as well as draw on real-world problems to foster the learners' research capacity and critical thinking skills. **Each university will review an existing curriculum, as well as produce and test an enriched curriculum that embeds research capacity and blended learning approaches.**

4. **Strengthen internal structures**
   In addition to working with faculty, we will also work with professional staff based in the academic, library, research, teaching, and ICT support services. These professional staff will play a central role in supporting the curriculum enrichment process as well as cascade the educational framework to other university departments within the institution. **Each university will be expected to create a working group consisting of members from the academic, library, ICT, research and teaching support units. Known as the ALIRT team, this group will support the curriculum enrichment process and cascade training within the institution.**

5. **Sector strengthening**
   The project approaches, tools, courses, and other materials will be shared widely with higher education institutes in Africa. **The AURA programme will produce a teaching and learning framework; two e-learning courses and three virtual learning events.**

The programme will be implemented using a blend of learning modalities, which consists of intensive face to face learning interventions and events; and the use of educational technologies such as e-learning and webinars. We will also establish a mentoring scheme to enable faculty to connect with academic peers from Africa and well as those scholars situated internationally.

In order to build on the efforts of others, we will also forge links to existing capacity development programmes, such as the DRUSSA and the Research4Life (R4L) programmes. Working in collaboration with other providers will ensure that the AURA programme works towards coordinated solutions that strengthen capacity in a sustainable and complementary way.

Note: a summary of the programme deliverables is provided in Section 2 of this report.

4.2 Project Design, Governance & Support

In addition to working with one initial faculty department, the AURA project team propose the following internal structures to support the implementation and rollout of the AURA programme approaches to other university departments.

4.21 The ALIRT team

Each partner institution will be expected to convene a **research capacity working group** who will have the mandate: to work with the project team to achieve the programme's goals and to play a significant role in strengthening capacity in their institution and potentially across the Higher Education (HE) sector in Africa. We call this working group the **ALIRT team** as they include representation from the following professional services:

- **A**cademic department,
- **L**ibrary,
- **I**CT Services,
- **R**esearch unit
- **T**eaching support

As the ALIRT team are key to the programme, they will be supported on a day to day basis by a local project co-ordinator, and a training quality coordinator based in South Africa or the United Kingdom. We anticipate the ALIRT team will need to dedicate a combined minimum of 160 days to the project over 1 year (i.e. 2 days per month for each representative over 1 year - there are five individuals in the ALIRT team). This figure may increase or decrease depending on the outcome of detailed negotiations with each partner institution. Institutions are expected to demonstrate that adequate provision will be made to finance the involvement of professional staff in this working group during the application and orientation processes.

The specific role and responsibilities of the ALIRT teams are as follows:

Design & Deliver Institutional Capacity Development Plans

- Contribute to the design and delivery of AURA related activities within their institution e.g. manage the needs analysis exercise, and co-design the **Institutional**

Capacity Development (ICD) plans.

- Negotiate for adequate human and technical capacity to deliver the ICD plans
- Assist the AURA project team in creating an institutional context analysis, and determine strategies for communicating and engaging effectively with faculty across the institution, and within the senior management team.

Curriculum Enrichment

- Work with faculty to enrich their subject curriculum and integrate the research-led, problem-based, teaching and learning approaches.
- Offer expert advice on how to incorporate research capacity, information and digital literacies into curriculum courses.

Institutionalise practices

- Play a role in formalising working practices between the university departments and professional services, reinforce their respective roles in delivering the university curricula.
- Sustain the programme approaches after the project is complete by cascading the framework to other departments.
- Co-develop and implement the university-wide cascade plans.

Sharing learning

- Contribute to reports about institutional activities on a monthly, quarterly and six-monthly basis.
- Share learning and experiences, through commissioned articles and blogs, to staff based in the university as well as other institutions via the online community of practice.
- Represent the programme at conferences and region-wide learning and knowledge sharing events.

The ALIRT teams are key to achieving the overall goals, and institutional behaviour change, that this project aims to achieve. They play a role in ensuring the project adopts a holistic approach to capacity development as well as contributing to sustaining the project outcomes by cascading the approaches to other university departments. In order to achieve the right level of impact, we will be flexible about the composition of the ALIRT team so that it fits within the institution's current staffing structures and existing capacity.

4.22 Project coordinators

The ALIRT teams will be supported by a project coordinator, who will be based on campus or located close to the institutions. The project coordinator(s) will work with the project consortium to define and manage the programme work plans, and will coordinate / co-facilitate activities relating to: the design and delivery of the Institutional Capacity Development (ICD) Plans; the curriculum enrichment process and programme communication activities.

The project coordinator(s) will play a bridging role between the AURA project team, the ALIRT team and the partner institutions. Ideally, a suitable candidate will be identified from within the institution's staffing community, and financial remuneration will be provided to the University for a proportion of the project coordinator's time. A suitable candidate would be someone who is a mid-level manager with exceptional organisational, planning, negotiation and communication skills. The institution will receive funding for approximately 50% of the project coordinator's time (note: this figure is indicative and dependent on further negotiations with the university). **This funding only applies to year 1 participation in the programme.** After this period institutions will be expected to demonstrate how they are integrating the AURA approaches into institutional structures and will therefore receive a reduced stipend for the project coordinator's role.

The specific role and responsibilities of the project coordinators are as follows:

Coordinate and manage programme activities

- Has a mandate from the Vice Chancellor to oversee and coordinate the programme.
- Act as day to day coordinator of the programme: liaising with senior management and the academic departments to organise the orientation meetings, and capacity development events.
- Coordinate the ALIRT team meetings: including timetabling, writing meeting records and tracking progress on actions.
- First level trouble-shooting: identify challenges that may impact on the project timelines, deliverables or successful programme outcomes. Work with the ALIRT team, academic department, AURA project team (and senior managers) to devise solutions, and where appropriate implement them.
- Work with internal structures to cascade AURA approaches to other university departments, and manage the implementation of the university-wide cascade plans.

Design & Deliver Institutional Capacity Development Plans

- Assist with the design of the Institutional Capacity Development (ICD) Plans: manage the needs' assessment process, ensure timely responses, monitor programmes of activity as well as coordinate individual / group-wide learning activities.
- Manage mentor / coaching opportunities with external institutions (such as IDS).

Curriculum Enrichment Process

- Oversee and manage the curriculum enrichment activities: scheduling, maintaining deadlines and coordinating the internal / project team reviews.

Sharing learning

- Programme Reporting: report on progress in monthly, quarterly and six-monthly reports.

- Form a community of practice with the project coordinators based in the other collaborating institutions; share learning and capture knowledge.
- Be responsible for motivating academics to collaborate in online communities of practice, and learning events; contribute to the design of local inputs to events.
- Communicate progress to the wider university community through online communities of practice and conferences.
- Collaborate with the ALIRT team on the design of university-wide learning events, such as a technology-day for academics and students.
- Co-author of publications.

5. The AURA diagnostics

AURA relies on existing research, as evidenced in the literature review (see section three), which is used to support the programmatic approaches in pedagogy as well as research capacity development. However, as the literature review showed much of the research done on these areas is carried out in a different context to the one we are operating in. Therefore, for AURA to proceed in an informed, evidential manner, it needs to carry out its own research to gather its own understanding of partner institutions, their concerns and their priorities. For this purpose AURA uses a set of 'diagnostics'.

The use of the word 'diagnostic,' for many, invokes images of medical testing. In this use of the term a diagnosis involves identifying the nature of an illness through examining relevant symptoms. The term is also used in education, to refer to a test that helps identify a student's learning problems so teachers can provide instruction to remedy those problems (Popham, 2009). However, our use of the term is going to be broader than this application. The AURA diagnostics are a profiling exercise. We will be using a variety of tools, notably content analysis, surveys, interviews and focus groups (see section 5.1 for further details). This enables us to build profiles at the individual and the institutional levels and sectoral levels. The purpose of these diagnostic, or profiling exercises, is to enable the AURA programme to tailor its interventions to our partner institutions' needs, rather than adopting a generic approach. There's copious evidence in the literature (see section 5.1.2.) that gathering data on individuals and organisations is crucial in building a research and teaching programme such as AURA. Our prior experiences confirm this. Furthermore, the AURA programme is contractually bound to carry out these investigations in our donor-related (i.e. the UK government's Department for International Development) logframe. The logframe requires that we form baselines, against which we then measure progress over the duration of the AURA programme. This diagnostics exercise will help monitor these objectives, as well as capture and share learning coming from the AURA programme.

The diagnostics section is divided into 2 parts.

- The first looks at the methods and processes, this gives the reader a step by step guide on how we will go about collecting and analysing our data. The aim of this section is to ensure transparency: a third party reader should be able to look at this section and have enough detail to recreate our methods and results.
- The second section is the AURA question bank: this is entitled the 'methods' section as the questions are split into surveys, interviews and focus groups. This provides the reader with the 'tools' the AURA programme will be using to gather information from our partner organisations: at the individual and institutional levels

5.1. AURA Diagnostics Methodology

This section looks at the processes we will be going through for the AURA diagnostic. The AURA programme aims to strike a balance between proactive and reactive elements of

Monitoring & Evaluation (M&E). The AURA diagnostics are planned in advance, linking to our M&E framework, consultations with our donors as well as well as the early communication we have had with our partner organisations. However, we aim to be flexible throughout the programme, and this will enable us to incorporate further procedures or tools as suitable once we develop our understanding of our partners. We acknowledge changes are inevitable, however the key is to make these changes in a systematic rather than haphazard manner.

Before going into the 'step by step' guide, we start off with a look at the methods we will be using for the diagnostics.

5.1.1. Content analysis

A large part of our profiling of partner organisations will be through a content analysis. A large part of this comes from the initial application form that partner organisations had to submit to be considered for selection. This gives us key details of each partner organisation. In addition to this the orientation meetings that followed acceptance on to the AURA programme produced an 'Ideas Board'. This provided inputs at the individual and institutional level directly from the institutions covering such particulars as their programme objectives and challenges. The Ideas Board provides us with a rich source on which to take our investigations further. Furthermore, regular meetings between the consortium and partner organisations will produce further documentation that will be used to add to the knowledge base of the partner organisations.

5.1.2. Surveys

The survey is first point of call to gather information that isn't available to us through a content analysis. The advantage of this method is that it allows one to reach large numbers and therefore enables one to take a bird's eye view of, in our case, each of our partnering institutions. The initial set of surveys, which are used to set baselines and give us pre-intervention level information, are based largely on information we have taken through the AURA application forms, the ideas boards and from our prior research and pedagogy experiences. The survey method is particularly well suited to generating quantitative data and we have often used this method to set benchmarks and then to assess progress against them.

Surveys could include simple yes/no questions or more complex, graded questions in which people assess themselves on, for example, a five-point scale. The latter may include questions about their perceived competence on various tasks, such as finding and using information. Surveys that assess people's knowledge before an intervention tend to be called **pre-diagnostic tests** because they can be followed **by post-diagnostic tests** that can indicate changes in competencies as a result of training. In AURA we will be using surveys to build a profile of our participants' skills, knowledge, behaviour, attitudes and values. Data tend to be gathered through closed questions (yes/no, or numeric scales) that enable quantitative data to be gathered. However, open questions can be included and provide

qualitative data where the respondent can explain why they have answered in the way that they have.

As well as assessing needs, programmes based on pre-assessments of trainees' current capabilities and contexts are more likely to be tailored to those needs. Pre-assessments can also help you make an explicit link between the learning concepts and trainees' real-world problems. Importantly, a pre-training diagnostic or test can be used as a 'control' at the end of a training intervention to assess impact by measuring the distance travelled. In M&E, distance travelled is a valuable tool for measuring the outcomes of interventions. When used in a training context, the distance travelled refers to the progress a trainee makes towards achieving a learning outcome as a result of participating in a training intervention.

There are three different AURA diagnostic surveys that we are proposing to carry out. Below is a description of each and the rationale behind them.

- **AURA Enabling survey**

The AURA 'Enabling Survey' focuses mostly on institutional factors, rather than merely the individual. Research carried out by the World Bank's Independent Evaluation Group (IEG), in a comprehensive study on capacity building programmes[1] reveals why focusing on multiple levels is important. The World Bank's report does this through looking at programmes which failed to incorporate multiple levels of analyses. It reports that in a large proportion of programmes, specifically when it comes to training workshops in capacity development programmes, individuals are too often trained for specific tasks before the organisational framework has been reformed to allow them to use the training effectively. This leaves the individual isolated in an organisation – and the lack of organisational support acts as a bottle neck for the development of the individual. This example illustrates that it is important to have institutional buy in. From an M&E perspective this example shows the importance of moving beyond analysing only at the individual level. Yet, *only* about one-third[2] of the projects that IEG reviewed for its Africa evaluation were clear about the relationships among individual, organizational, and institutional aspects of capacity and the need to make changes in their sequence and combination that can be expected to deliver results. For these reasons the AURA M&E will focus on multiple levels of analysis. The AURA Enabling survey aims to identify these bottlenecks in advance.

- **AURA Intervention surveys (Carried out pre and post intervention) for Research and Pedagogy**

The intervention surveys focus on the attributes of those participating in the intervention. This involves multiple surveys because it includes: separate surveys for the research interventions and another for the pedagogy intervention. The surveys will be sent before each of the interventions (pre-intervention diagnostic), as well as after (post intervention diagnostic) – and this will be done for both, research and pedagogy.

[1] https://openknowledge.worldbank.org/bitstream/handle/10986/9585/389150Capacity0D1Brief11901PUBLIC1.pdf?sequence=1

[2] Results are from a review in 2005 and therefore only indicative.

The pre-intervention survey is used to give us a baseline of where the participant stands prior to any intervention. We then monitor progress made by the participant, on a set of attributes, by comparing the pre and post diagnostic surveys. It is common for such surveys to focus only on individual skills. In AURA, however, we take a multi-faceted approach and focus not only on skills, but also on knowledge, behaviour, attitudes and values. This, like the justification for the 'Enabling survey' is to ensure sustainability and to create more meaningful and widespread change on different levels.

The below is a guide to the attributes the intervention level surveys will be focusing on:

- **Knowledge**: this is focused on what the individual 'knows' – in terms of facts or learned argument. For AURA this is mostly going to be subject specific: so for instance an individual on the teaching components may be tested on the distinction between learner-centred pedagogy and more traditional measures, or a specific research methodology such as asking participants to discuss the benefits of community-led approaches relative to researcher-led approaches.

- **Skills**: skills include the application of knowledge: for instance performing a task on SPSS requires an understanding of basic principles of statistics, but also involves applying these general principles to a specific set of numbers. The distinction between knowledge and skills is captured succinctly by an article in 'Difference Between.net': Knowledge refers to learning concepts, principles and information regarding a particular subject(s) by a person through books, media, encyclopaedias, academic institutions and other sources. Skill refers to the ability of using that information and applying it in a context.

- **Behaviour**: behavioural change is a greater transformation than skills development. It is possible to develop knowledge and skills in something but not use it, the use aspect represents the change in behaviour. Behavioural change has to be sustainable, rather than a one-off change. There are multiple theories of how this behavioural change can come about, for a discussion on Social Cognitive Theory; Theory of Planned Behaviour; and Transtheoretical (Stages of Change) Model see the World Bank paper on 'Theories of Behaviour Change.

- **Attitudes**: these are views a participant has about the value or applicability of a particular skill or approach. More formally, attitudes have been described as: "an hypothetical construct that represents a person's like or dislike for anything. Attitude is a judgement made on the 'attitude object' (a person, place, task, event, skill, etc.). These judgements can range from positive, negative or ambivalent (Kumar 2014).

- **Values:** Values are formed from a set of attitudes. Values are ideas that we hold to be important (compared to, say beliefs, which are concepts we hold to be true).

It is important to emphasise that these attributes are interrelated. Take for instance knowledge and skills: knowledge is a prerequisite for many skills, and for this reason a theory-based driving examination is carried out before the practical test. After all, the knowledge that the far left-hand lane in a high-way is the speeding lane is required before using the skills to overtake. Both skills and knowledge however, do not necessary suggest any concrete change. A driver, for instance, may possess the knowledge of where to overtake and have the skill to do so, but this does not necessarily mean they will put this into practice. This is why behaviour is an important unit of analysis. But change in behaviour typically manifests itself after knowledge and skills development and therefore behavioural change is measured later on.

- **AURA Impact survey**

Increasingly donors for capacity building programmes like AURA focus more than just on immediate gains. The argument goes that value for money is only ensured if there is some tangible, long term benefit to what they are funding (DFID, 2014). The UK government's Department for International Development (DFID) have identified 3 impact objectives for AURA. These are:

1. Stronger research and research communications
2. Enhanced human capacity
3. Sector strengthening

The categories are deliberately set at a broader level than what intervention level diagnostics are focused on. To take the third as an example, sector strengthening is not something we can meaningfully measure immediately after one of interventions has taken place. Once there is enhanced human capacity through numerous interventions over a long period of time, only then is there is the potential for sector developments of any kind. The impact surveys will be carried out some months after an intervention and will look at how participants are using what they have learned in their environment. This allows us to gauge whether there have been any changes to their working practices and indeed allows us to then attempt to attribute which of these changes may have taken place as a result of the AURA programme.

The disadvantage of the survey method, however, is that it's often unsuitable for detailed responses. Therefore, at least two other methods will be used to supplement our survey data. Details of these are below.

5.1.3. Interviews

To supplement the bird's eye view generated through the survey method, we will be using interviews. We have in the past used interviews to follow up on relevant findings from our surveys, the interview process allows us to engage in a dialogue on a specific topic for a richer and more detailed understanding.

Interviews can be face-to-face or virtual (e.g.by telephone). Interviews can lead to both quantitative and qualitative data. Generally, however, the data are qualitative and provide

an insight into people's current situations. For example, people may be asked about their role and the tasks they perform and how information helps them. Barriers can be identified, for example the accessibility of sources, a lack of information competencies etc. One method is to use the 'critical incident technique' whereby people are asked to reflect on situations where they needed information, such as needing to get health information to help care for a partner or academic research to write a policy-brief. Once identified, interviewees are asked to explore what led up to the situation, i.e. what created the need; how they sought information, i.e. indicating their information-seeking behaviour and identifying 'helps' and 'hindrances'; and how they applied the information, i.e. helping to understand their needs better and their ability to make use of the information. Task analysis is another common interview technique where tasks are associated with roles or a situation, such as sharing information in the workplace. This provides information about current practice and can elicit current obstacles, such as who they should share information with, why and how; how they should store and manage information etc.

One of the major problems interviews have had in development evaluations is that they've not used rigorous sampling methods. When interviews are carried out without rigorous sampling, regardless of intentions, they're open to the charge of bias or, worse, misrepresentation. Before we carry out interviews we will disclose the sampling methods used and ensure it is a systematic process in which it is evident that we did not simply pick people favourable to our programme.

5.1.4. Focus groups

The interview gives us depth, however this is often from a singular perspective. Focus groups, therefore, will be used when there is a need for a plurality of views. This is a useful method to engage in, or indeed, resolve a debate or discussion. Furthermore, focus groups – due to the back and forth exchange of views – are useful for research papers and blogs that the AURA project will the generating.

Discussions in focus groups can be with small groups of potential trainees or other stakeholders can be informal but must be well facilitated. These can be captured on video, audio recording, flip-chart and Post-it notes. This method can be used in a participative fashion where people reflect on their information needs and how they seek and use information. In this case, the facilitator enables the conversation, using various tools such as flip-charts or Post-it notes or 'cause-and-effect' diagrams. The latter can be used, for example, to highlight particular problems (their cause and effect) in a community, such as a lack of information security, and then the diagram used to reflect on the kind of information they need to resolve the situation and the capabilities they need to access and use the information.

Focus groups are also good for discussing and enabling reflection of current practice and attitudes. For example, a team may use this method to reflect on their information practices, for example, how they manage and store their information. This can highlight different practices in the team and help identify good practice and consensus on necessary changes in behaviour and the need for training.

Group sessions are also important post-training to enable reflection on what has been learned. This leads to deeper learning and can also generate ideas for how our interventions can be improved.

5.2 Step by step approach

The first step is that a content analysis is carried out of each partner institution. This involves the AURA application form and ideas boards. Below is the relevance of each, in turn:

The **AURA application** form was our first major connection with what became our partner institutions. Briefly, the purpose of this form was to assess the suitability of applicants for the AURA programme. This involved asking questions about institutional preparedness: such as looking at initial partner motivations for applying to the programme; management buy in; available skill sets; and previous experiences with new pedagogical practices and researched aligned to AURA. Answers to these questions give us the background information needed to begin our institutional profiling. Due to the intensive nature of the AURA programme the application forms were extremely thorough, containing over 30 written questions in addition to an interview process. Our thinking is that we use this valuable information in a systematic way.

The **AURA Ideas Board** was an exercise completed at the AURA inception meetings. The orientation meetings were held at five institutions, separately. At this point, given that the application process had been completed and the AURA already had background information, the ideas boards were more targeted at specific questions. This included:

- **Objectives**: this is what the partnering institutions are hoping to get out of the AURA programme. The purpose of the objectives is to determine at a strategic level how AURA will enable the institution to achieve its organisational objectives.
- **Challenges**: these are the obstacles in the way of achieving the AURA objectives. These need to be addressed either before or during the AURA programme to ensure the objectives are met.
- **Capacity needed**: this is capacity needed to address the challenges that would then enable us to meet the objectives.
- **Outcomes**: this is what happens as a result of challenges met and capacity is increased. The outcome is what you want to produce (or see) as a result of the programme.
- **First steps**: these are the immediate steps you feel are necessary in order to achieve success in AURA. They may be institutional processes or more transformative in nature – such as working with the organisation to transform culture or attitudes.
- **What we offer others**: this is what the partnering institution feels it can offer other partnering institutions participating in the AURA programme. This emphasises peer-to-peer learning – a crucial aspect of the AURA programme.

- **What other offer us**: this is what you feel other AURA participating institutions might be able to offer to your organisation. This is the 'flip side' of the bullet point immediately above it.

However, the information presented in the ideas board was more specifically targeted than the application form and included a student and faculty perspective on research and teaching. This exercise yielded over 800 contributions from partnering institutions on the above themes. The first part of the analysis was to make the data manageable. This involved going through each of the responses and coding them with a label that identifies its theme. These themes were then accumulated to identify which areas where the most pressing to our partner institutions. The most frequently discussed categories were then used as a basis for survey questions, and intervention design.

To help understand how our sources of information supplement one another, it's useful to draw upon the analogy of a funnel. The AURA application form is the first part of the information poured through the funnel. It's the necessarily broad because it's the first step in the relationship between the consortium and partnering institutions; following this is the ideas board, more directed and coming at a point where we already know more about the partner institutions. See below.

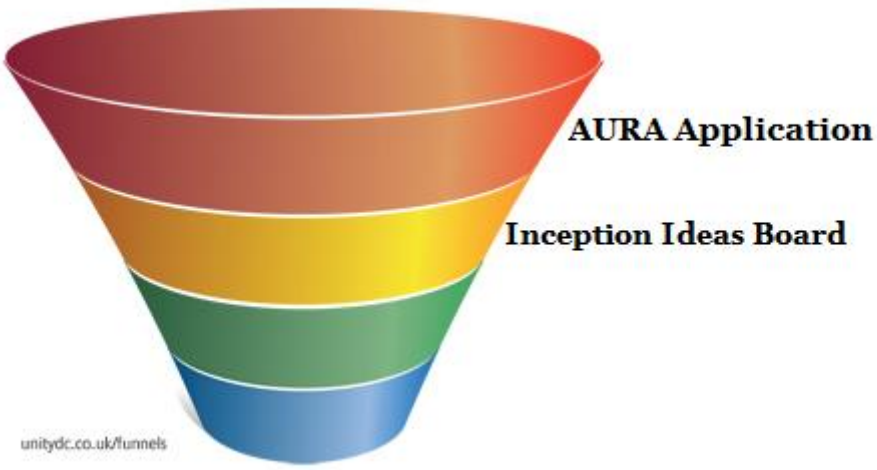

Diagram 1: funnel showing the complimentary nature of methods used for AURA diagnostics for the content analysis elements of the diagnostic.

The next objective of our diagnostics is to zone in further still: and this is done through the survey stage. The surveys will collect far more responses than the ideas board exercise did and therefore offer a better representative sample. But in addition, the surveys also offer more detailed information that builds on evidence gathered through the ideas board process.

A pre-diagnostic enabling and intervention level survey will be sent to individuals interested in attending our interventions. The objectives of this survey are to:

- Help us supplement and triangulate with the information already received from the application forms and the ideas boards;
- Help us identify institutional enablers and barriers the AURA programme may encounter;
- Give us an idea of what each participants' interests are as this enables us to customize our interventions;
- Get an idea of their prior levels of knowledge and skills that are relevant to our interventions;
- Help establish their behaviour, attitudes and values relevant to the course and the wider AURA programme. Note: the section on surveys goes into further detail on the differences between knowledge, skills, behaviour, attitudes and values.
- Helps identify institutional factors that might enable, or indeed hinder, the AURA interventions.

See below diagram.

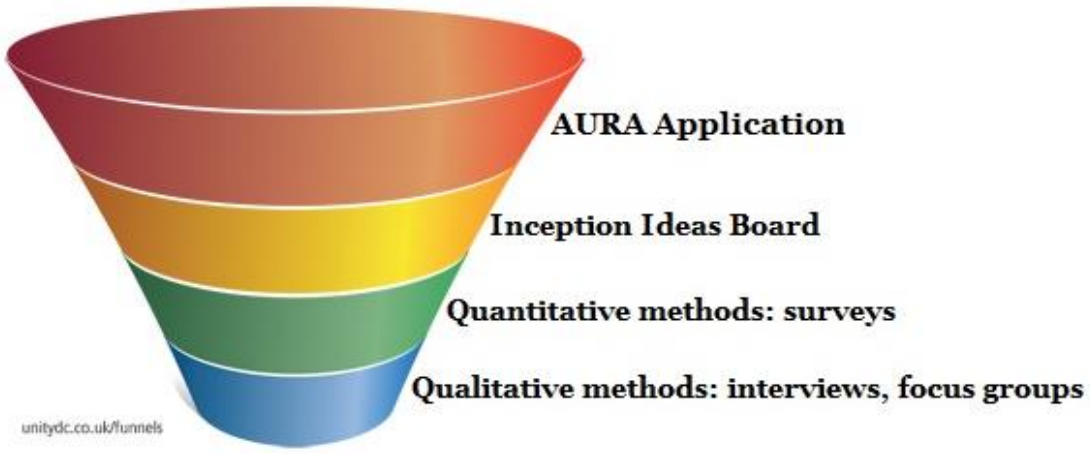

Diagram 2: funnel showing the complimentary nature of methods used for AURA diagnostics for the full repertoire of diagnostic methods.

The final methods, at the tip of the funnel, are the qualitative. The funnel started with the broadest sources and now ends with the most specific and most targeted. The first three layers have given us indicators of patterns and trends. The final tiers will enable us to investigate this in further detail through qualitative and quantitative analysis. This is the point at which we obtain more personalised accounts from AURA recipients.

The application form might list institutional objectives, the ideas board goes into them in more detail and from multiple perspectives, the survey then focuses on specific aspects of them, but it's left to the final layer to, for instance, investigate what fulfilling these objectives might mean to an individual and what difference it's making to their lives. The combination of these approaches illustrate the extent to which AURA is adopting a mixed methods approach in its M&E.

6. Kenyatta and AURA

Please see separate proposal document for AURA within the KU context. **Note: this section of the report is confidential and is made available only to KU and IDS AURA programme staff and is currently not available to the public.**

7. Appendices

Appendix 1. References

Africa2pointO (n.d.). Africa2pointO: About us. Retrieved from: http://africa2point0.org/ africa/index.php/about.

Agbemabiese, P. (2009). *African centred female education before colonization: Exploring the physical, socioeconomic, and spiritual content of girl child educational curriculum*. Retrieved from Academia: http://www.academia.edu/1483436/African_Traditional_Education_Prior_to_Colonization_Christopher House Adult Literacy Program

Association of American Colleges and Universities (April 2013). E*mployers more interested in critical thinking and problem solving than college major.* Washington, DC. Retrieved from: http://www.aacu.org/press_room/press_releases/2013/leapcompactandemployersurvey.cfm

Barrett, A. M. (2007). Beyond the polarization of pedagogy: models of classroom practice in Tanzanian primary schools. *Comparative Education*, 43(2), 273- 294.

Bligh, D. A. (2000). *What's the use of lectures*. San Francisco: Jossey-Bass.

Bonwell, C. C., & Eison, J. A. (1991). *Active learning: Creating excitement in the classroom*. ASHE-ERIC Higher Education Report no. 1. Washington, D.C.: The George Washington University, School of Education and Human Development.

Brodie, K., Lelliott, A., & Davis, H. (2002). Forms and substance in learner-centred teaching: teachers' take-up from an in-service programme in South Africa. *Teaching and Teacher Education*. 18(5), 541-559.

Bunyi, G. W. (2013). The quest for quality education: the case of curriculum innovations in Kenya, *European Journal of Training and Development*, 37(7), 678-691.

Dewey, J. (1916). *Democracy and education. An introduction to the philosophy of education* (1966 ed.). New York: Free Press.

Department for International Development DFID (2014, July 17). *DFID literature review: What is the evidence on the impact of research on international development?* Retrieved from: http://www.ukcds.org.uk/resources/dfid-literature-review-what-is-the-evidence-on-the-impact-of-research-on-international

Fassinger, P. A. (1996). Professors' and students' perception of why students participate in class. *Teaching Sociology*, 24(1), 25-33.

Fensham, P., Gunstone, R., & White, R. (Eds.). (2012). *The content of science: A constructive approach to its teaching and learning*. Routledge.

Edwards, V., & Li, D. (2011). Confucius, constructivism and the impact of continuing professional development on teachers of English in China. *ELT Research Papers*, 11(03). Retrieved from: http://centaur.reading.ac.uk/25973/

Hadfield, Dhillon, Jopling and Goffee. (2012). Teaching that matters. Million+ Group http://www.millionplus.ac.uk/research-policy/reports/latest-reports/teaching-that-matters

Harle, J. (2010, November). Growing Knowledge: Access to research in east and southern African universities. *The Association of Commonwealth Universities*. Retrieved from: https://www.acu.ac.uk/focus-areas/arcadia-growing-knowledge

Hepworth, M., & Duvigneau, S. (2013). *Building research capacity: Enabling critical thinking through information literacy in Higher Education in Africa*. Brighton, IDS. Retrieved from: http://opendocs.ids.ac.uk/opendocs/bitstream/handle/123456789/2301/BuildingResearchCapacityR1.pdf

Hepworth M., & Walton M. (2013). *Developing People's Information Capabilities: Fostering Information Literacy in Educational, Workplace and Community Contexts.* Bingley: Emerald Group Publishing Limited, Bingley, pp. 1-278.

Ilic, D. (2015). A randomised controlled trial of a blended learning education intervention for teaching evidence-based medicine. *BMC Medical Education*, 15(39). Retrieved from: http://www.biomedcentral.com/1472-6920/15/39

Inter-Agency Network for Education in Emergencies, INEE (2004). *Minimum standards for education in emergencies, chronic crises and early reconstruction*. Retrieved from: http://www.unicef.org/violencestudy/pdf/min_standards_education_emergencies.pdf.

Kumar, M (2014) in the '*Education and Science' Section.* http://docmo.hubpages.com/hub/Teaching-and-Assessing-Attitudes

Lai, K-W. (1993, June). Minimal computer technologies and learner-centred environments - some New-Zealand experience. *Computers & Education*. 20(4), 291-297. doi:10.1016/0360-1315(93)90002-Z

Li, D., (2011). *Confucius, constructivism and the impact of continuing professional development on teachers of English in China*. ELT Research Papers, 11-03. Report. Retrieved from: http://centaur.reading.ac.uk/25973/

Marah, J. K. (2006, June). The virtues and challenges in traditional African education. *The Journal of Pan African Studies*, 1(4). Retrieved from: http://www.jpanafrican.com/docs/vol1no4/VirtuesAndChallengesTraditionalAfricanEducation_JPASvol1no4.pdf

Ministry of Education and Culture [MOEC]. 2004. Education Sector Development Programme (SEDP), 2004-2009. Dar es Salaam, The United Republic of Tanzania.

Mollins, T. (2001). *Learning Our Way: Women, Computers and Literacy*. Toronto: St. Christopher House Adult Literacy Program.

Mushi, P. A. K. (2009). *History and Development of Education in Tanzania*. Dar es Salaam University Press.

Pascarella, E. T., Terenzini, P. T. (2005). *How college affects students: A this decade of research, Volume 2*. Jossey-Bass.

Piotrowski, J. (2014). Top development journals dominated by Northern scholars. *Sci Dev Net*. Retrieved from: http://www.scidev.net/south-asia/publishing/news/development-journals-northern-scholars-2.html

Popham, W. J. (2009, March). All About Assessment/Diagnosing the Diagnostic Test. *Educational Leadership*. 66(6). Retrieved from: http://www.ascd.org/publications/educational-leadership/mar09/vol66/num06/Diagnosing-the-Diagnostic-Test.aspx

Preece, J., & Griffin, C. (2002). Radical and feminist pedagogies. In Jarvis, P. (Ed). *The Theory and Practice of Teaching* (pp. 39-54). London: Kogan Page.

Report of the Joint ILO/UNESCO Committee of experts on the application of the recommendations concerning teaching personnel (CEART). (2006, November). Retrieved from: http://www.ilo.org/global/industries-and-sectors/education/WCMS_162256/lang--en/index.htm

Schweisfurth, M. (2013). Learner-centred education in international perspective. *Journal of International and Comparative Education*, 2(1). Retrieved from: http://crice.um.edu.my/downloads/1Schweisfurth.pdf

Schweisfurth, M. (2011). Learner-centred education in developing country contexts: from solution to problem*? International Journal of Educational Development*, 31(5), 425–432.

Sesay, I., & Kermeliotis, T. (2011). Africa's emerging leaders launch 2020 growth vision. *CNN*. Retrieved from: http://edition.cnn.com/2011/10/12/world/africa/africa-2-0-entrepreneurs/

UNESCO Associated Schools (2008). *First Collection of Good Practices for Quality Education*. Retrieved from: http://unesdoc. unesco.org/images/0016/001627/162766e.pdf

United Nations Economic Commission for Africa. (n.d.). African Economic Conference 2014. Retrieved from: http://www.uneca.org/aec2014

United Republic of Tanzania (1984). *Educational system in Tanzania towards the year 2000*. Dar es Salaam: Ministry of Education.

Vavrus, F. (2009). The cultural politics of constructivist pedagogies: Teacher education reform in the United Republic of Tanzania. *International Journal of Educational Development*, 29(3), 303-311. Retrieved from: http://www.sciencedirect.com/science/article/pii/S0738059308000485

Vygotsky, L. S. (1978). *Mind in society: development of higher psychological processes*. Harvard University Press.

World Bank (2014). *A decade of development in sub-Saharan African science, technology, engineering and mathematics research*. Washington, DC: World Bank Group. Retrieved from: http://documents.worldbank.org/curated/en/2014/09/20240847/decade-development-sub-saharan-african-science-technology-engineering-mathematics-research

Worldbank.org. Improving the Quality and Quantity of Scientific Research in Africa. Retrieved from: https://www.worldbank.org/en/region/afr/publication/improving-the-quality-and-quantity-of-scientific-research-in-africa

Zepke, N., Leach, L., & Prebble, T. (2006, October). Being learner centred: one way to improve student retention? *Studies in Higher Education*, 31(5), 587-600. Retrieved from: http://faculty.njcu.edu/fmoran/gscc/zepke.pdf

Appendix 2. Enabling survey question bank

Enabling survey question bank (Please note: these questions are indicative of what the survey might look like – however changes are likely to me made to the structure and nature of these subject to negotiations with the consortium and partner institutions)

<https://www.surveymonkey.com/s/Enabling_AURA>

Appendix 3. Intervention survey question bank

Intervention survey question bank (Please note: these questions are indicative of what the survey might look like – however changes are likely to me made to the structure and nature of these subject to negotiations with the consortium and partner institutions)

Research intervention survey: https://www.surveymonkey.com/s/AURA_res
Pedagogy intervention survey: https://www.surveymonkey.com/s/AURA_pedagogy